Theory of information

# Exercises for the laboratory

1. Two game dice were thrown. Does the message k1: „sum of the dice values is lower than 5” contain more or less information than k2: „sum of the dice values is larger than 9”? What is the amount of information in these two messages?
2. A data source sends 3n equally probable messages. What is the entropy of this data source?
3. A data source sends n2 equally probable messages. What is the entropy of this data source?
4. Construct a 0-1 optimal coding for the messages k1, k2, k3, k4, k5 appearing with the probabilities . Compute the redundancy of this coding.

# Zadania domowe

1. A coin was thrown 4 times. Does the message k1: „in 4 throws there were exactly 3 heads” contain more or less information than k2: „in 4 throws there were exactly 3 tails”? What is the amount of information in these messages? **(1 pkt)**
2. A data source sends 2n equally probable messages. What is the entropy of this data source? **(1 pkt)**
3. Construct a 0-1 optimal coding for the messages k1, k2, k3, k4, k5 appearing with the probabilities. Compute the redundancy of this coding. **(2 pkt)**